

IN THE CLAIMS:

Please amend claims 1, 9, 18 and 26 and cancel claims 2-5, 10-13, 16, 19-22, and 26-33 as follows.

Claim 1. (Currently Amended) A method of determining a current in an electric machine coupled to a polyphase bus, the method comprising:

detecting a rotational position of said electric machine with a position encoder coupled to said electric machine;

controlling an inverter comprising a plurality of switching devices, said inverter having an input coupled to a direct current bus, and an output coupled to said polyphase bus, said inverter responsive to commands from a controller coupled to said inverter and to said position encoder;

measuring a current from said direct current bus; and

capturing said current at a predefined interval of time, said predefined interval of time being established when a particular back EMF voltage waveform for a given phase of said electric machine attains a peak value, said electric machine is within a predefined rotational angle, a predefined combination of said plurality of switching devices are active, and an angle between a phase voltage and a corresponding back EMF on each phase of said polyphase bus being within a range of about minus thirty to about thirty degrees; and  
determining a value representative of a torque current from said current.

Claims 2-5. (Cancelled)

Claim 6. (Original) The method of Claim 1 wherein said electric machine comprises a permanent magnetic motor and said position encoder includes a rotor position sensor.

Claim 7. (Original) The method of Claim 1 wherein said electric machine is a permanent magnet DC brushless motor characterized by a sinusoidal magnetic field excitation.

Claim 8. (Original) The method of Claim 1 wherein said capturing is characterized by sampling a signal value representative of said current and said sampling is controlled by said controller to be operative only at said predefined interval of time.

Claim 9. (Currently Amended) A system for determining a current in an electric machine coupled to a polyphase bus, the system comprising:

a position encoder coupled to said electric machine to detect rotational position;

an inverter comprising a plurality of switching devices, said inverter having an input coupled to a direct current bus, and an output coupled to said polyphase bus, responsive to commands from a controller;

said controller coupled to said inverter and to said position encoder;

a sensor operably coupled to said controller, said sensor detecting to detect a current from said direct current bus; ~~and~~

~~wherein~~ said sensor capturing captures said current at a predefined interval of time, said predefined interval of time being established when a particular back EMF voltage waveform for a given phase of said electric machine attains a peak value, said electric machine is within a predefined rotational angle, a predefined combination of said switching devices are active, and an angle between a phase voltage and a corresponding back EMF on each phase of said polyphase bus being within a range of about minus thirty to about thirty degrees; and

said controller determining a value representative of a torque current from said current.

Claims 10-13. (Cancelled)

Claim 14. (Original) The system of Claim 9 wherein said electric machine comprises a permanent magnetic motor and said position encoder includes a rotor position sensor.

Claim 15. (Original) The system of Claim 9 wherein said electric machine is a permanent magnet DC brushless motor characterized by a sinusoidal magnetic field excitation.

Claim 16. (Cancelled).

Claim 17. (Original) The system of Claim 9 wherein said capturing is characterized by sampling a signal value representative of said current and said sampling is controlled by said controller to be operative only at said predefined interval of time.

Claim 18. (Currently Amended) A storage medium encoded with a machine-readable computer program code for determining a current in an electric machine coupled to a polyphase bus, said storage medium including instructions for causing controller to implement a method comprising:

detecting a rotational position of said electric machine with a position encoder coupled to said electric machine;

controlling an inverter comprising a plurality of switching devices, said inverter having an input coupled to a direct current bus, and an output coupled to said polyphase bus, said inverter responsive to commands from a controller coupled to said inverter and to said position encoder;

measuring a current from said direct current bus; ~~and~~

capturing said current at a predefined interval of time, said predefined interval of time being established when a particular back EMF voltage waveform for a given phase of said electric machine attains a peak value, said electric machine is within a predefined rotational angle, a predefined combination of said plurality of switching devices are active, and an angle between a phase voltage and a corresponding back EMF on each phase of said polyphase bus being within a range of about minus thirty to about thirty degrees; and  
determining a value representative of a torque current from said current.

Claims 19-22. (Cancelled)

Claim 23. (Original) The storage medium of Claim 18 wherein said electric machine comprises a permanent magnetic motor and said position encoder includes a rotor position sensor.

Claim 24. (Original) The storage medium of Claim 18 wherein said electric machine is a permanent magnet DC brushless motor characterized by a sinusoidal magnetic field excitation.

Claim 25. (Original) The storage medium of Claim 18 wherein said capturing is characterized by sampling a signal value representative of said current and said sampling is controlled by said controller to be operative only at said predefined interval of time.

Claims 26-33 (Cancelled).

Please add new claims 34 and 35.

Claim 34. (New) A method of determining a current in an electric machine coupled to a polyphase bus, the method comprising:

- detecting a rotational position of said electric machine with a position sensor coupled to said electric machine;

- controlling an inverter comprising a plurality of switching devices, said inverter having an input coupled to a direct current bus, and an output coupled to said polyphase bus, said inverter responsive to commands from a controller coupled to said inverter and to said position sensor;

- measuring a current from said direct current bus;

- capturing said current at a predefined interval of time, said predefined interval of time being established when said electric machine is at a predefined rotational angle, a predefined combination of said plurality of switching devices are active, and an angle between a phase voltage and a corresponding phase current on each phase of said polyphase bus being within a range of about minus thirty to about thirty degrees; and

- determining a set of values representative of a magnitude of currents on each phase of said polyphase bus.

Claim 35. (Currently Amended) A system for determining a current in an electric machine coupled to a polyphase bus, the system comprising:

- a position sensor coupled to said electric machine to detect rotational position;
- an inverter comprising a plurality of switching devices, said inverter having an input coupled to a direct current bus, and an output coupled to said polyphase bus, responsive to commands from a controller;
- said controller coupled to said inverter and to said position sensor;
- a first sensor operably coupled to said controller, said first sensor detecting a current from said direct current bus;
- said first sensor capturing said current at a predefined interval of time, said predefined interval of time being established when said electric machine is at a predefined rotational angle, a predefined combination of said switching devices are active, and an angle between a phase voltage and a corresponding phase current on each phase of said polyphase bus being within a range of about minus thirty to about thirty degrees; and
- said controller determining a set of values representative of a magnitude of currents on each phase of said polyphase bus.